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Umeda et al.

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MOBILE COMMUNICATION SYSTEM**5,109,390 4/1992 Gilhousen et al. 370/18
5,170,412 12/1992 Massey 375/206[75] Inventors: **Narumi Umeda**, Yokohama; **Tadashi
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Yokosuka, all of Japan**FOREIGN PATENT DOCUMENTS**58-56290 12/1983 Japan .
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Network Inc.**, Tokyo, Japan**OTHER PUBLICATIONS**Ruprecht, J., et al., "Code Time Division Multiple Access:
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1992, pp. 736-739.[21] Appl. No.: **256,230**[22] PCT Filed: **Nov. 4, 1993**[86] PCT No.: **PCT/JP93/01592**§ 371 Date: **Jun. 29, 1994**§ 102(e) Date: **Jun. 29, 1994**[87] PCT Pub. No.: **WO94/10766**PCT Pub. Date: **May 11, 1994**[30] **Foreign Application Priority Data**Nov. 4, 1992 [JP] Japan 4-295340
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Dec. 24, 1992 [JP] Japan 4-344741[51] **Int. Cl.⁶** **H04J 13/04**[52] **U.S. Cl.** **370/18; 370/95.1**[58] **Field of Search** 370/18, 95.1, 95.3,
370/19; 375/200, 201, 205, 206; 455/56.1[56] **References Cited****U.S. PATENT DOCUMENTS**4,222,115 9/1980 Cooper et al. 375/200
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[57]

ABSTRACT

In a mobile communication system which uses a code division multiple access (CDMA) scheme for communications between a base station and a plurality of mobile stations, the base station has a transmitting device in which a plurality of information sequences S_1 through S_n are respectively spread by multipliers 11 through 1n with a common spreading code from a spreading code generator circuit 10, the spread codes are provided to transmitting timing control circuits 21 through 2n and then added by an adder 30 to perform transmitting timing offset multiplexing and then the spread signals are transmitted to the mobile stations at different transmitting timing. The mobile stations each have a receiving device which receives that one of the transmitted signals which was transmitted at timing predetermined for the mobile station and despreads the received signal with the same spreading code as that used in the transmitting device, thereby reconstructing the original information sequence concerned.

5 Claims, 19 Drawing Sheets